

ABSTRACT

The present invention provides a surface acoustic wave sensor for detecting a target substance by measuring the change in frequency due to the mass applied to a reaction membrane placed on a surface acoustic wave element. The surface acoustic wave sensor has high sensitivity due to the improvement of the structure surface acoustic wave element.

The surface acoustic wave sensor 1 uses an SH-type surface acoustic wave and includes a rotated Y-cut LiTaO₃ substrate having Euler angles (0°, 0° to 18°, 0° ± 5°) or (0°, 58° to 180°, 0° ± 5°); electrodes 3, principally containing Au, for exciting a surface acoustic wave, the electrodes being arranged on the LiTaO₃ substrate 2; and a reaction membrane 4, bound to a target substance or a binding substance bound to the target substance, covering the electrodes 3 arranged on the LiTaO₃ substrate 2. The interdigital transducers 3 have a normalized thickness of 0.8% to 9.5%, the normalized thickness being determined by normalizing the thickness of the interdigital transducers 3 by the wavelength of the surface acoustic wave.